

COMPLETE LISTING OF CLAIMS
IN ASCENDING ORDER WITH STATUS INDICATOR

Please cancel claims 52, 53, 61 and 85 without prejudice or disclaimer to the subject matter recited therein, amend claims 54, 55, 60, 62-65, 69, 70, 74, 77, 79, 81-83, 86, 89 and 90, and add new claims 91-94.

1. – 53. Canceled.

54. (Amended) The gamma detector of claim [53] 70, wherein said scintillation element comprises sodium iodide.

55. (Amended) The gamma detector of claim [53] 70, further comprising a reflector wrapped around said scintillation element.

56. (Original) The gamma detector of claim 55, further comprising an alumina powder between said reflector and said scintillation element.

57. (Original) The gamma detector of claim 55, wherein said reflector comprises polytetrafluoroethylene.

58. (Original) The gamma detector of claim 55, further comprising a polyimide wrap surrounding said reflector.

59. (Original) The gamma detector of claim 58, further comprising a polyimide tape for holding said polyimide wrap in place.

60. (Twice Amended) The gamma detector of claim 59, further comprising [a flexible support sleeve and] a lubricant between said polyimide tape and said flexible support sleeve.

61. Canceled.

62. (Amended) The gamma detector of claim [61] 70, [further comprising a flexible support sleeve at least partially surrounding said scintillation element within said shield,] wherein said first flexible support sleeve providing dynamic support for said scintillation element.

63. (Amended) The gamma detector of claim 62, wherein said flexible support sleeves comprise[s] a material transparent to gamma radiation.

64. (Amended) The gamma detector of claim 63, wherein said flexible support sleeves comprise[s] stainless steel.

65. (Amended) The gamma detector of claim 62, wherein said first flexible support sleeve includes bends and flat portions, said flat portions contacting said scintillation element and said bends contacting said shield.

66. (Original) The gamma detector of claim 65, wherein said bends promote friction between said shield and said flexible support sleeve and suppress relative movement between said shield and said flexible support sleeve.

67. (Original) The gamma detector of claim 65, wherein said flat portions include a coating on a surface facing said scintillation element.

68. (Original) The gamma detector of claim 67, wherein said coating comprises a dry lubricant.

69. (Amended) The gamma detector of claim [61] 70, wherein said shield includes a plurality of stiffening rings.

70. (Amended) [The gamma detector of claim 61, further] A gamma detector,
comprising:

a radiation sensing element comprising a scintillation element, wherein said radiation sensing element transforms radiation into light;

a light receiving element, wherein said light receiving element transforms light into electrical impulses;

a housing encasing said radiation sensing element and said light receiving element;

at least one window in said housing for allowing radiation into the detector, wherein said window is formed of a material comprising polyether ether ketone;

a shield within said housing and encompassing said scintillation element;

a rigid dynamic enclosure encompassing said shield and said light receiving element;

a first flexible support sleeve within said shield; and

a second flexible support sleeve at least partially surrounding said shield within said rigid dynamic enclosure.

71. (Original) The gamma detector of claim 70, wherein said flexible support sleeves each partially extend circumferentially around said scintillation element leaving a gap between said scintillation element and said rigid dynamic enclosure to allow entry of radiation.

72. (Original) The gamma detector of claim 71, wherein said rigid dynamic enclosure includes an opening and wherein said opening is aligned with and has at least as large a circumferential extent as said gap.

73. (Original) The gamma detector of claim 72, wherein said enclosure includes a plurality of rings and fingers, said rings completely extending across said opening and said fingers partially extending across said opening.

74. (Amended) The gamma detector of claim [52] 70, wherein said light receiving element comprises a photomultiplier tube.

75. (Original) The gamma detector of claim 74, wherein said photomultiplier tube includes a faceplate and a photo-cathode.

76. (Original) The gamma detector of claim 74, further comprising an explosion-proof housing within said housing and encasing said photomultiplier tube.

77. (Amended) The gamma detector of claim [52] 70, further comprising an optical coupler optically coupled to a first end of said scintillation element.

78. (Original) The gamma detector of claim 77, further comprising an axial spring positioned at a second end of said scintillation element to bias said scintillation element toward said optical coupler.

79. (Twice Amended) The gamma detector of claim 78, wherein said light receiving element comprises a photomultiplier tube, further comprising:

a window positioned between said photomultiplier tube and said scintillation element; and

[a] wherein said second flexible support sleeve [surrounding] surrounds said photomultiplier tube within said housing, said second flexible support sleeve providing dynamic support for said photomultiplier tube.

80. (Original) The gamma detector of claim 79, wherein said photomultiplier tube includes a faceplate and a photo-cathode.

81. (Twice Amended) [The gamma detector of claim 79, further] A gamma detector, comprising:

a radiation sensing element, wherein said radiation sensing element transforms radiation into light;

a shield surrounding said radiation sensing element;

a light receiving element comprising a photomultiplier tube, wherein said light receiving element transforms light into electrical impulses;

a housing encasing said radiation sensing element and said light receiving element, wherein said housing comprises armor;

at least one window in said housing for allowing radiation into the detector, wherein said window is formed of a material comprising polyether ether ketone;

a first flexible support sleeve within said shield;

a second flexible support sleeve at least partially surrounding said shield;

[an explosion-proof housing surrounding said module housing;] and

a third flexible support sleeve surrounding said [module] housing [within said explosion-proof housing], said third flexible support sleeve providing dynamic support for said photomultiplier tube.

82. (Amended) The gamma detector of claim [81] 91, further comprising:

a rigid dynamic enclosure encompassing said shield and said explosion-proof housing; and

a fourth flexible support sleeve surrounding said explosion-proof housing within said rigid dynamic enclosure, said fourth flexible support sleeve providing dynamic support for said photomultiplier tube.

83. (Amended) The gamma detector of claim [52] 81, wherein said material forming said window is a multi-layer woven carbon-fiber matrix impregnated with polyether ether ketone.

84. (Original) The gamma detector of claim 83, wherein said carbon fiber matrix makes up about sixty percent by volume of said material forming said window.

85. Canceled.

86. (Amended) The gamma detector of claim [85] 81, further comprising a spray mechanism.

87. (Original) The gamma detector of claim 86, wherein said spray mechanism is integral with said armor.

88. (Original) The gamma detector of claim 86, wherein said spray mechanism is attached to said armor.

89. (Amended) The gamma detector [system] of claim 86, wherein said spray mechanism comprises a sprayer in fluid connection with a spray line.

90. (Amended) The gamma detector [system] of claim 89, wherein said spray line is connected to said sprayer by a spray channel.

91. (New) The gamma detector of claim 81, further comprising an explosion-proof housing surrounding said housing.

92. (New) The gamma detector of claim 81, further comprising an optical coupler optically coupled to a first end of said radiation sensing element.

93. (New) The gamma detector of claim 92, further comprising an axial spring positioned at a second end of said radiation sensing element to bias said radiation sensing element toward said optical coupler.

94. (New) The gamma detector of claim 81, further comprising a window positioned between said photomultiplier tube and said radiation sensing element.